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EXAMINER

OJINI, EZIAMARA ANTHONY

ART UNIT PAPER NUMBER

3723

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,172

Applicant(s)

CRON, BRIAN E.

Examiner

Anthony Ojini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-11 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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DETAILED ACTION

Applicant's election of Group 1 (claims 1-11) and cancellation of claims 12-35 in Paper No. 3 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3,4 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicant Admitted Prior Art (AAPA)** in view of **Han et al. (6,740,247 B1)**.

With respect to claims 1,4, AAPA discloses a method for conditioning a surface of a polishing pad after chemical-mechanical polishing of a semiconductor substrate with the pad surface (18), comprising the following steps: providing a conditioning disk (24); positioning the pad with the pad surface against the conditioning stone and displacing the pad relative to the conditioning stone to rub the pad surface with the condition stone.

AAPA fails to disclose the step of exposing the pad surface to cleaning material that is entirely in the vapor phase, the cleaning material comprising steam.

Han et al. disclose a steam outlet nozzle (30) being configured to jet a cleaning material and steam onto the pad surface during the conditioning of the pad (see col. 3, lines 4-11 & fig. 1).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to perform the method of **AAPA** with steam jet nozzles being configured to jet a cleaning material and steam onto the pad surface during the conditioning of the pad surface in view of **Inoue et al.** so as to dislodge and remove particulates embedded in the pad.

With respect to claim 3, **AAPA** fails to disclose wherein a cleaning material has a temperature of at least 200⁰ F as it flows through the outlet port.

Han et al. disclose a cleaning material that has a temperature of at least 200⁰ F as it flows through the outlet port (see col. 7, lines 25-27).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to perform method of **AAPA with** a cleaning material that has a temperature of at least 200⁰ F as it flows through the outlet port in view of **Han et al.** so as to dislodge and remove particles from the entire surface of the pad.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicant Admitted Prior Art (AAPA)** in view of **Han et al.** as applied to claim 1 above, and further in view of **Inoue et al.** (6,443,816 B2).

With respect to claim 2, **AAPA** fails to disclose wherein a jet steam is jetted onto the pad surface to impacts the surface with a pressure of from about **10 psig (24psi)** to **20 psig (34psi)**.

Inoue et al. disclose a steam outlet port (7-1 to 7-4), the steam outlet port being configured to jet steam onto the pad surface such that the steam impacts the surface with a pressure of from about 0.01 Mpa (1.45 psi) to 0.7 Mpa (101 psi).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide apparatus of **AAPA** with steam jet nozzles being configured to jet steam onto the pad surface such that the steam impacts the surface with a pressure of from about 0.01 Mpa (1.45 psi) to 0.7 Mpa (101 psi) in view of **Inoue et al.** so as to dislodge and remove particulates embedded in the pad.

Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicant Admitted Prior Art (AAPA)** in view of **Han et al.** as applied to claim 1 above, and further in view of **Lorimer** (6,589,878 B1).

With respect to claim 5, **AAPA**, fails to disclose wherein the pad has a contaminant associated therewith prior to the conditioning, and wherein a chemical agent suitable for reacting with the contaminant is within the cleaning material during the exposure of the pad surface to the cleaning material.

Lorimer discloses a mixture of steam and ammonia (see col. 5, lines 4-7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a polishing pad with contaminant associated therewith prior to the conditioning because it is old and well known that a used polishing pad has a contaminant associated therewith prior to the conditioning.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to perform method of **AAPA** with steam comprising a chemical agent, wherein the chemical agent within the steam, reacts with the contaminant during the exposure of the pad surface to the steam in view of **Lorimer** so as to make sure particulates embedded in the pad are remove completely.

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With respect to claims 6,7, AAPA fails to disclose ammonium and ammonium citrate. **Lorimer** discloses a mixture of steam and ammonia but fail to teach ammonium and ammonium citrate within a steam.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide apparatus of **AAPA with** a mixture of steam with ammonia in view of Lorimer so as to remove particle contaminates.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide apparatus of **AAPA with** ammonium and ammonium citrate within a steam **so as to dislodge and remove particles from the entire surface of the pad**, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. See also *Ballas Liquidating Co. v. Allied industries of Kansas, Inc.* (DC Kans) 205 USPQ 331.

With respect to claim 8, AAPA is discussed in claim 6. AAPA also discloses wherein the chemical-mechanical polishing utilizes the pad to polish a copper-containing material (see page 2, [0003]).

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicant Admitted Prior Art (AAPA)** in view of **Han et al.** as applied to claim 1 above, and further in view of **Brunelli** (6,533,647 B1).

With respect to claims 9-11, AAPA fails to disclose wherein the pad is rubbed against a conditioning stone **during, prior, and after** the exposure to the steam respectively.

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Brunelli discloses a method of planarizing surface of a polishing pad (240) wherein the pad is rubbed against a conditioning disk (250) during, prior, and after an exposure to a steam respectively (see fig. 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to perform the method of **AAPA** with conditioning disk wherein the pad is rubbed against the conditioning disk during, prior, and after an exposure to a steam respectively in view of **Brunelli** so as to dislodge and remove particles from the surface of the pad.

Response to Amendment

Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Ojini whose telephone number is 571 272 4492. The examiner can normally be reached on 7 to 4 Tuesday-Friday with every other Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 571 272 4485. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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AO
5/13/05